

# PATENT SPECIFICATION



Convention Date (Sweden): Nov. 10, 1924.

242,652

Application Date (In United Kingdom): Nov. 5, 1925. No. 27,850/25.

Complete Accepted: Feb. 25, 1926.

## COMPLETE SPECIFICATION.

### Arrangement in Rotary Pumps or Motors for Compressible or Expansive Mediums.

I, CARL OSCAR JOSEF MONTELIUS, of Östermalmsgatan 18, Stockholm, Sweden, a subject of the King of Sweden, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to rotary pumps or motors for compressible or expansive mediums respectively. According to the invention, the pump is particularly adapted to compress air or another gas to a high pressure, but may also be used as a motor, the propelling fluid being either air of a high pressure or another expansive medium, such as for instance an exploding mixture of gasolene and air.

In my Specification No. 231,865 I have described a rotary pump or motor suitable for an incompressible or non-expansive medium, but which cannot very well be used for a compressible or expansive medium.

According to the said application the device consists in the combination of a housing, a number of intermeshing and co-operating revoluble screws in said housing, said screws being of opposite pitch, and the helicoidal surfaces of the thread of the one screw being both substantially concave and those of the thread of the co-operating screw both substantially convex, so that the screws will fit to each other along an uninterrupted contact line defined by parts of the outside edges of said helicoidal surfaces and by lines generating the outside perimeters of the threads and by those generating the inside surfaces of the screw grooves.

The present invention is based on the same principle as is the above described device, but is adapted for compressible or expansive mediums, as mentioned

[Price 1/-].

above. To this end the grooves of each screw are according to the invention closed at the one end of the screw and open in a certain position into an opening in the housing enclosing the screws.

In the annexed drawing one form of embodiment of a rotary compressor or motor according to the invention is shown. Fig. 1 is a partial longitudinal section of the device, and Fig. 2 is a transverse section thereof, viewed from the left hand side of Fig. 1. Figs. 3 and 4 illustrate diagrammatically a development of the co-operating screws according to Figs. 1 and 2, showing the gas- or air-tight closures of the screws in two successive positions.

Referring to the drawing, 1 designates a housing forming an interior chamber and resting on two feet 2. Fixed to the said housing are two end plates 3 and 4 forming bearings for two parallel shafts 5 and 6, the first one of which is driven and to this end carries a pulley 7. At the opposite end the shaft 5 carries a spur wheel 8 meshing with another spur wheel 9 fixed to the shaft 6, the gear ratio being 2:1. Fixed to the shaft 5 are further two double-threaded screws 10 and 11, the screw 10 having left-hand threads and the screw 11 right-hand threads. Similarly, there are fixed to the shaft 6 two single-threaded screws 12 and 13 co-operating with the screws 10 and 11 and having right-hand and left-hand threads, respectively. The inside ends of the screws of each pair bear tightly against each other, the screw grooves closed by the threads of the co-operating screw. Formed in the housing 1 at each end thereof are inlet openings 14.

When the shaft 5 with the screws 10 and 11 is revolved in a clockwise direc-

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introduced through the opening 15, and an ignition device 27—either a spark plug or an ignition chamber—being inserted in the housing, as indicated in Fig. 2.

A cooling medium may be circulated through channels 28 made in the screws and also in known manner through channels in the housing (not shown in the drawing). Means may also be provided for leading a cooling medium through the parts of the screw grooves, which are not active.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In a compressor or motor for air, gas or steam, the combination of a housing, at least two openings in said housing and a number of intermeshing and co-operating revoluble screws in said housing, said screws being of opposite pitch, and the helicoidal surfaces of the thread of the one screw being both substantially concave and those of the thread of the co-operating screw being both substantially convex, so that the screws will fit to each other along an uninterrupted contact line defined by parts of the outside edges of said helicoidal surfaces and by lines generating the outside perimeters of the threads and by those generating the inside sur-

faces of the screw grooves, the grooves of each screw being closed at the one end of the screw and opening in a certain position into at least one of said openings in the housing.

2. A device according to Claim 1, characterized by each shaft carrying two or more screws threaded in opposite directions.

3. A device according to Claim 1 or 2, characterized by means for supplying lubricant being disposed at or in proximity to the end of the screws, where the working medium enters the screw grooves.

4. A device according to Claim 1, 2 or 3, characterized by channels for conducting a cooling medium being arranged in the screws.

5. A device according to Claim 1, 2 or 3, characterized by means for conducting a cooling medium through the non-active parts of the grooves of the screws.

6. A motor according to Claims 1—5, characterized by means for controlling the quantity of the supplied working medium being disposed in the inlet channel.

Dated this 5th day of November, 1925.

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418  
206

103/128

242,652 COMPLETE SPECIFICATION

1 SHEET

242,652

[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1

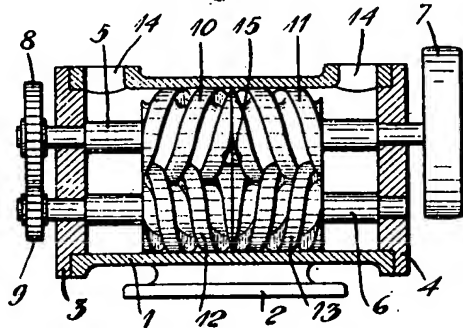


Fig. 2

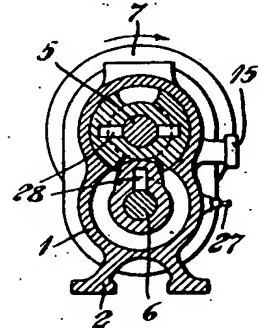


Fig. 3

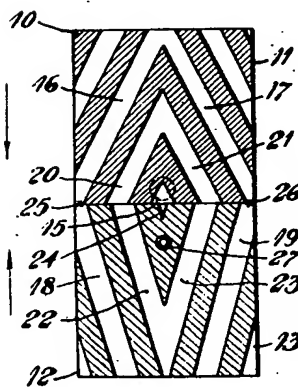
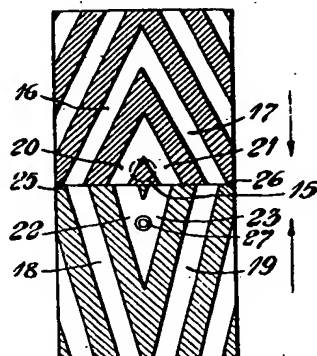


Fig. 4



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